

**Immature Forms, Genitalia, and Notes  
on the Biology of *Anelaphus albofasciatus* Linnell<sup>1</sup>**  
(Coleoptera: Cerambycidae)

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Long-horned beetles of the genus *Anelaphus* generally feed on various hardwood trees (Linsley, 1963). *Anelaphus albofasciatus* (Linnell) is unique within this genus for its habit of feeding on cactus. Adults have previously been collected on *Opuntia bigelovii* Engelmann (Davis, 1928) and on *Echinocactus* sp. (Linsley, 1963). This paper reports my observations of *A. albofasciatus* on *Opuntia whipplei* Engelmann and Bigalow (3 to 6 miles west of Seligman, Yavapai County, Arizona, during mid July and early September 1964 and mid June 1966) and describes characters that separate *Anelaphus* from *Moneilema*, another cerambycid genus which may occur on the same host.

NOTES ON THE BIOLOGY

The adult beetles are active in June and July, the larvae are present in July and the pupae appear from late July and throughout the fall. These observations suggest that there is one generation per year on *Opuntia whipplei*.

The adults become active after dusk, and are usually found near the top of the cactus where they feed on the newest growth. They are most often found crawling slowly over the host plants but are also often motionless on the top of a branch with their legs extended and their bodies held high off the substratum; the antennae are held high in the air at a 45° angle. The beetles may remain motionless in this position, which resembles preflight posture, for up to five hours.

Several mating pairs were observed, all at night and on the top of the cacti.

The size and shape of larval mines at early larval instars indicate that eggs are deposited near or on the surface of the host plant. The young larvae apparently mine directly into the pith of the host through an opening of the lace in the cactus skeleton, and proceed either up or

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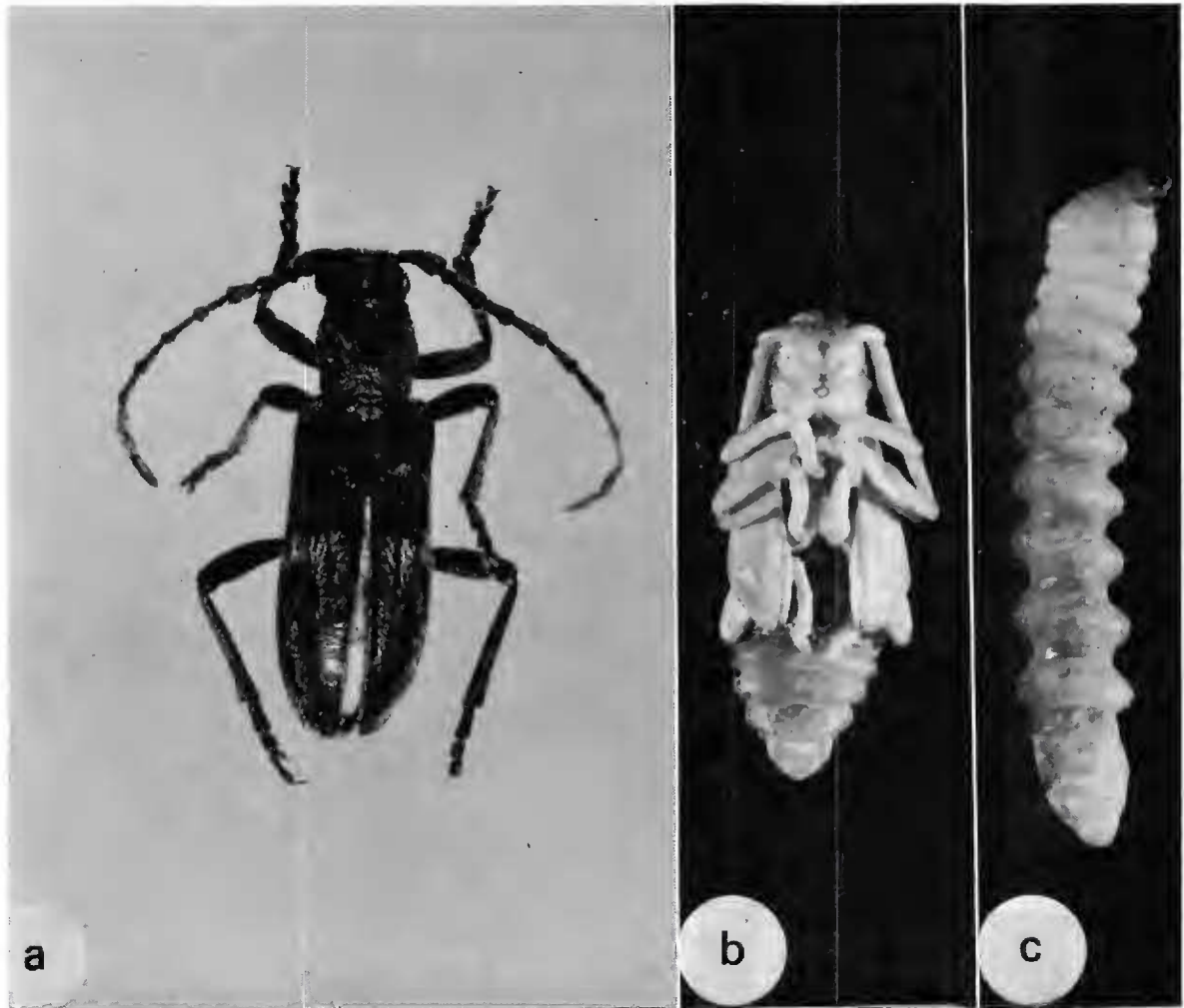


FIG. 1. *Anelaphus albofasciatus* Linnell, a) adult, b) pupa, c) larva ( $\times 4$ ) (Photos by P. Debnam, Canadian Forestry Service).

down from this point of entry. In contrast, the larvae of the cerambycid *Moneilema* sp. first mine the exudate produced by the plant and then proceed into the pith (Raske, 1966). The larvae of *A. albofasciatus* constructs a pupal cell from pith and frass, usually at the bottom of the larval mine (Fig. 2).

The cerambycid *Moneilema semipunctatum forte* LeC. (Raske, 1966) attacks *O. whipplei* in the same area. The larvae of the two species can be distinguished by the presence (*Anelaphus*) or absence (*Moneilema*) of prolegs. Generally, *A. albofasciatus* larvae are found in the upper, smaller stems and branches of the plant, while *M. semipunctatum forte* larvae tend to be in the main stem near the ground or in the roots.

Larvae of *A. albofasciatus* were reared successfully in the laboratory on the artificial diet used by Lyon and Flake (1966). From one of the larvae, 41 adults of the internal parasite, *Tetrastichus holbeini* Girault (Hymenoptera: Eulophidae), emerged in early August.

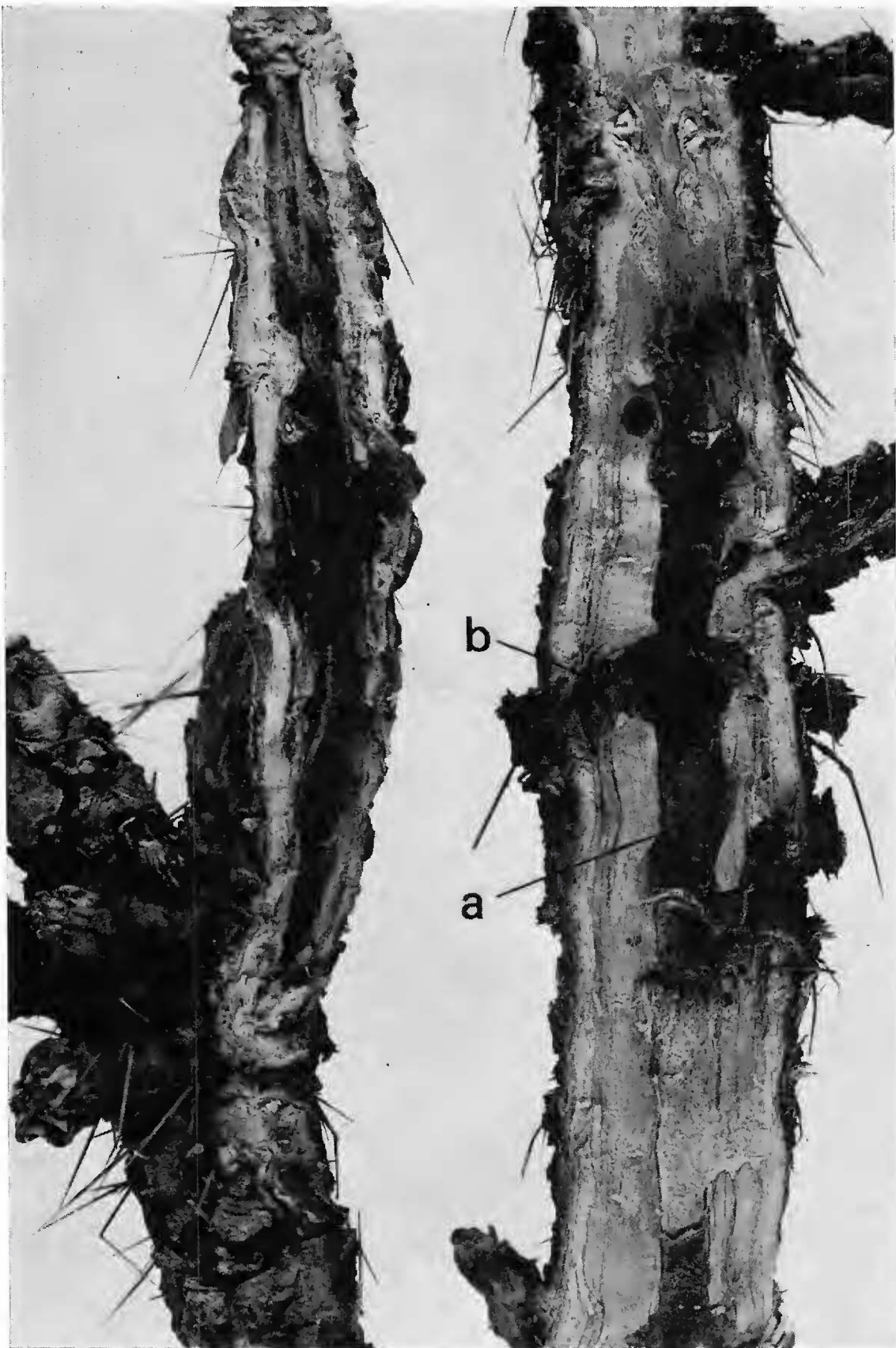


FIG. 2. Larval mine of *A. albofasciatus* in *Opuntia whipplei* with pupal cell (a) and adult exit hole (b). ( $\times 1.3$ ) (Photo by A. A. Blaker, Univ. of California).

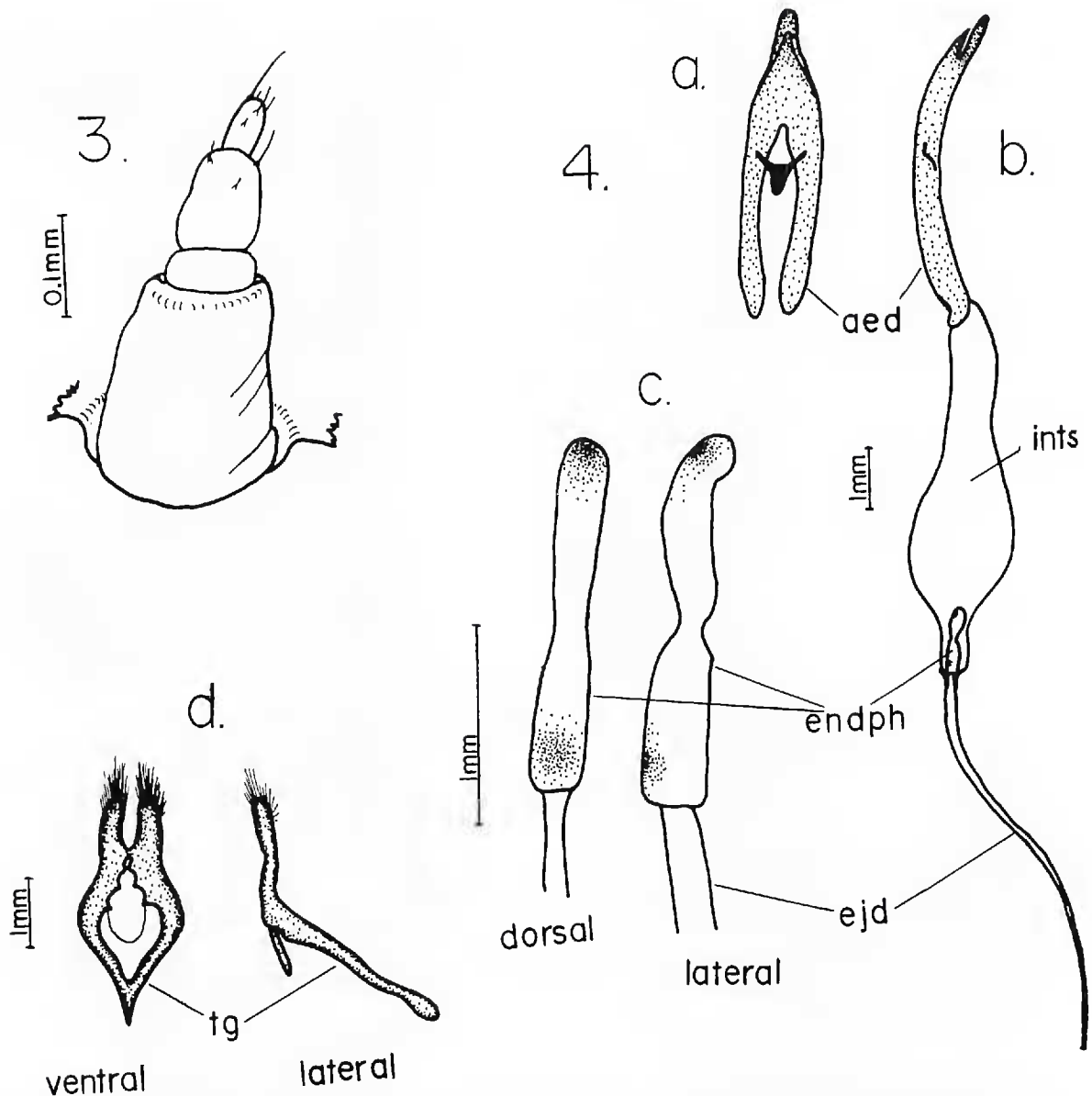


FIG. 3. Antenna of larva of *A. albofasciatus*. FIG. 4. Male genitalia of *A. albofasciatus*, a) aedeagus, b) intromittent structures, c) endophallus (dorsal and lateral), d) tegmen (ventral and lateral). *aed* = aedeagus, *ejd* = ejaculatory duct, *endph* = endophallus, *ints* = internal sac, *tg* = tegmen.

#### DESCRIPTION OF LIFE STAGES

**ADULT.**—Linsley (1963) described the external characters of adult *A. albofasciatus* (Fig. 1a), but the internal reproductive structures of taxonomic value were not included. These are illustrated in Figs. 4 and 5.

**MATURE LARVA.**—Length 18–22 mm. (Fig. 1c). Head transverse, moderately depressed. Genae testaceous behind ocelli for about one-fourth distance between ocelli and base of mandible; sclerotization of mouth frame narrow, setae scattered, most not in testaceous area; antennae three-segmented (Fig. 3); mandible short, stout, cutting edge “gouge-like”; labrum setose, evenly rounded anteriorly, suddenly constricted posteriorly; clypeus transverse, four times as wide as long, anterior margin sclerotized; ligula obtusely conical, tip setose; labial palp two-

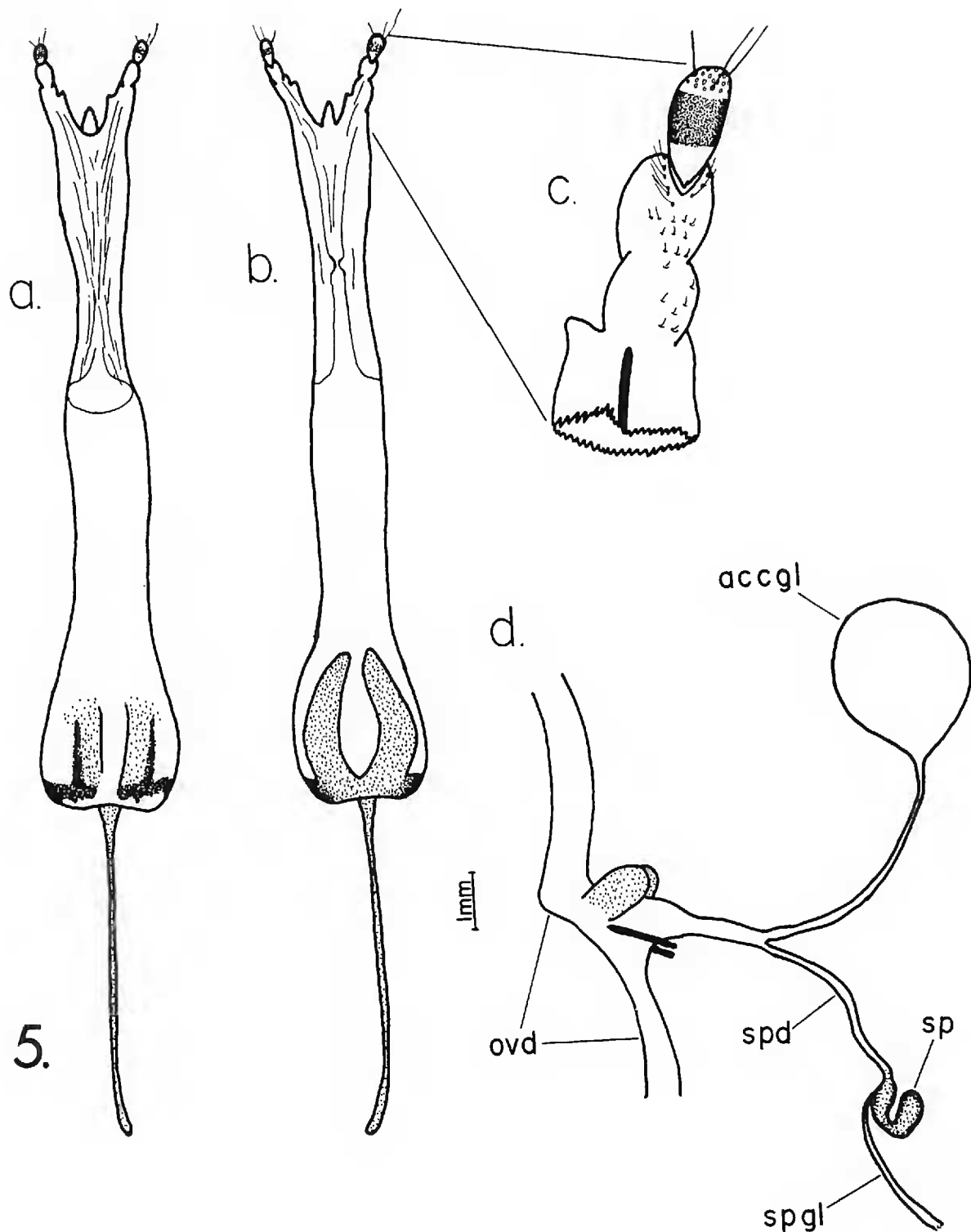


FIG. 5. *Anelaphus albofasciatus*, female genitalia. a) ovipositor (dorsal), b) ovipositor (ventral), c) stylus, d) internal genitalia. *accgl* = accessory gland, *ovd* = oviduct, *sp* = spermatheca, *spd* = spermathecal duct, *spgl* = spermathecal gland.

segmented, lightly sclerotized; maxillary palp three-segmented, lightly sclerotized, process of palpifer prominent, maxillary lobe, cardo, and stipes sclerotized basally, with scattered setae; mentum and submentum membranous; gula with sides widely diverging posteriorly; ocelli two, pigmented, subcontiguous. Pronotum transverse, moderately setose, distinctly raised from pleural regions, dorsal plate divided, with two distinct light testaceous areas, longitudinally striate; eusterna

rugose. Abdomen rugose, with ampullae shining, bilobed with transverse and lateral deep grooves, subtuberculate; epipleura inconspicuous; pleural disc a deep pore with radial striations; spiracles broadly oval to suborbicular; peritreme not raised above general level of cuticle.

PUPA (female ?)—Length 13–15 mm. (Fig. 1b). Head with labrum subequal to clypeus in length, clypeus with deep longitudinal groove; antennae reaching to third abdominal segment. Pro-, meso- and metanotum with few inconspicuous setae. Abdominal terga with heavily sclerotized incurved spines, fewest and smallest on first abdominal segment, increasing in size and number on posterior segments; most spines with subapical setae; posterior margin of eighth tergite with row of large spines; sterna glabrous, tenth sternum deeply, irregularly furrowed, with pronounced median blister-like structure, bearing two small setae posteriorly.

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